



**CURRICULUM GUIDE
2008-2009**

**COMPUTER SCIENCE
CERTIFICATES OF ACCOMPLISHMENT**

**Including Cisco Certified Network Associate; Computer and Information Literacy;
Computer Applications in Biotechnology; Computer Programming;
Computer Studies Proficiency; Data Communications and Internetworking;
Data Communications and Web Programming; Database Administration;
Desktop Support (A+, Server+, MCP); Internet Applications Development;
Java Developer; Linux Administration; .NET Programming I; .NET Programming II;
Office Computer Applications; Office Support; SQL Database Administrator;
3D Modeling and Animation; VB Programming; Web Content; Web Delivery;
Web Infrastructure; Web Page Design; Windows MCSA; Windows MCSE**

Requirements for Certificate of Accomplishment:

- a) Complete satisfactorily the courses listed for the particular certificate.
- b) Complete at least 50% of the required units at Ohlone College.
- c) Maintain a 2.0 grade point average.

CISCO CERTIFIED NETWORK ASSOCIATE

Upon completion of the Cisco Certified Network Associate Certificate of Accomplishment students will have gained the expertise they need to pass the test required to achieve Cisco Certified Networking Associate (CCNA) status. CCNA Certification skills include the ability to install, configure, and operate simple-routed LAN, routed WAN, and switched LAN networks.

CNET-155A	Network Fundamentals	4
CNET-155B	Routing Protocols and Concepts	4
CNET-156A	LAN Switching and Wireless	2
CNET-156B	WAN Design and Support	<u>2</u>
		12

COMPUTER AND INFORMATION LITERACY

This certificate will provide literacy in the area of computers and information technology.

CAOT-153	Introduction to Internet	1
CS-101	Introduction to Computers and Information Technology	3
CS-101L	Computer Applications	2
CS-102	Introduction to Computer Programming Using C++ OR	4
CS-104A	Visual Basic.NET Programming	(4)
CS-152	Data Communications	<u>2</u>
		12

COMPUTER APPLICATIONS IN BIOTECHNOLOGY

The field of computer applications in biotechnology is a complex hybrid of two distinct scientific disciplines—computer technology and bioscience. This certificate is designed to provide an understanding of bioinformatics and other computer related subjects for students whether or not they possess a background in bioscience. This program is also useful for students who desire to explore this new information science in which computers help to simulate, visualize, and analyze genetic and biological information. This certificate provides an introduction to the fundamental scientific and computational concepts, methods, and tools central to the growing field of computer applications in biotechnology.

Students who complete this program will be able to do the following:

- Explain in writing the cutting-edge biological concepts and technologies in biotechnology;
- Use the main databases, tools, and methods for the storage, searching, and analysis of biological molecules;
- Solve computational problems common to bioinformatics and apply classical computer science solutions to biotechnology;
- Use the statistical analysis software systems for data analysis and manipulation with emphasis on bioinformatics tasks;
- Describe the basic fundamentals of cells, major cellular components, DNA, and proteins;
- Use basic sequence analysis techniques in bioinformatics;
- Apply fundamental algorithms in biomolecular sequence analysis to problem solving in biotechnology.

BIOT-112	Introduction to Bioinformatics	2
BIOT-121	Biotechnology Careers	1
CS-131/BIOT-131	Computing Concepts in Biotechnology	4
CS-133/BIOT-133	SAS Programming	3
CS-132/BIOT-132	DNA Computing OR	1
BIOT-122	Introduction to Nanotechnology	<u>(3)</u>
		11-13

COMPUTER PROGRAMMING

Upon completion of the Computer Programming Certificate students will be capable of writing high-level language programs in procedural and event-driven languages and will be able to do some object-oriented programming as well.

CS-102	Introduction to Computer Programming Using C++	4
CS-104A	Visual Basic.NET Programming	4
CS-116	Object-Oriented Programming Using C++ OR	4
CS-170	Java Programming	(4)
CS-118	Introduction to Assembly Language Programming OR	4
CS-124	Programming with Data Structures	<u>(4)</u>
		16

COMPUTER STUDIES PROFICIENCY

This certificate prepares students with an introduction to office skills.

CAOT-134A	Beginning Microsoft Access	.5
CAOT-153	Introduction to Internet	1
CAOT-156	Microsoft Publisher	.5
CAOT-164	Introduction to FrontPage	.5
CAOT-172A	Beginning Word	.5
CAOT-187	PowerPoint Presentations	.5
CAOT-193A	Beginning Excel	.5
CS-101	Introduction to Computers and Information Technology	<u>3</u>
		7

DATA COMMUNICATIONS AND INTERNETWORKING

This certificate prepares students with an introduction to office and computer program data structures in C++ programming skills.

CS-101	Introduction to Computers and Information Technology	3
CS-101L	Computer Applications	2
CS-102	Introduction to Computer Programming Using C++	4
CS-152	Data Communications	<u>2</u>
		11

DATA COMMUNICATIONS AND WEB PROGRAMMING

This certificate will provide students with information and skills in data communications and Internet programming.

CAOT-153	Introduction to Internet	1
CS-152	Data Communications	2
CS-175	Script Technology for Web Development	4
CS-176	Introduction to PERL CGI Programming	<u>4</u>
		11

DATABASE ADMINISTRATION

This certificate prepares students in Oracle database administration.

CNET-135	Database Fundamentals I: Database Architecture and Administration	2
CNET-136	Database Fundamentals II: Database Backup and Recovery	2
CNET-137	Introduction to SQL Programming	<u>4</u>
		8

DESKTOP SUPPORT (A+, SERVER+, MCP)

This certificate will assist students in offering frontline or helpdesk support to end-users, assist computer users in getting the most from their computer products, and lead them through various procedures, helping them to fix problems. This support is conducted over the telephone, one-on-one, or in a small group training session.

CNET-105	PC Hardware and Software	4
CNET-150	Network Operating Systems	4
CNET-160A	Microsoft Client Operating Systems	2
CNET-162A	Microsoft Server Operating Systems	<u>2</u>
		12

INTERNET APPLICATIONS DEVELOPMENT

This certificate provides students with knowledge and skills in Internet applications programming and development.

CS-170	Java Programming	4
CS-175	Script Technology for Web Development OR	4
CS-178	XML	<u>(3)</u>
		7-8

JAVA DEVELOPER

Upon completion of the Java Developer Certificate Program students will be capable to develop advanced Java programs and applications for the client-server computing, the Internet, and the Web Services with JSP, J2EE, and EJB.

CS-170	Java Programming	4
CS-172	Servlets and JSP	4
CS-173	Java EE and EJB	4
CS-178	XML	<u>3</u>
		15

LINUX ADMINISTRATION

CNET-140A	Linux Installation and Configuration	2
CNET-140B	Linux System Administration	2
CNET-142A	Linux Networking	2
CNET-142B	Linux Security	2
CNET-146	Introduction to UNIX/Linux	3
CNET-157	TCP/IP and Internetworking	<u>3</u>
		14

.NET PROGRAMMING I

The Computer Studies certificate in .NET Programming prepares students to develop Windows applications and Web Services and applications. Successful completion of the courses provides students with the foundation for the Microsoft MCSD/MCAD certification.

CAOT-145	Microsoft Visual Basic for Applications	3
CS-104A	Visual Basic.NET Programming OR	4
CS-122	C#.NET Programming	(4)
CS-104B	Advanced .NET Programming	4
CS-178	XML	<u>3</u>
		14

.NET PROGRAMMING II

The Computer Studies certificate in .NET Programming prepares students to develop Windows applications and Web Services and applications. Successful completion of the courses provides students with the foundation for the Microsoft MCSD/MCAD certification.

CNET-160A	Microsoft Client Operating Systems	2
CS-104C	ASP.NET Programming	4
CS-104D	Web Services for .NET	4
CS-162	XHTML OR	4
CS-175	Script Technology for Web Development OR	(4)
CS-126	Internet Security Programming	<u>(4)</u>
		14

OFFICE COMPUTER APPLICATIONS

Upon completion of the Office Computer Applications Certificate of Accomplishment students will have a broad understanding of today's computers and information technology. Students will have the ability to use a wide variety of business software such as word processing, spreadsheet, database, presentation, and desktop publishing. In addition, students will be introduced to Windows, Accounting, and the Internet.

BA-109A	Computerized Accounting for Personal Finance OR	1.5
BA-109B	Computerized Accounting for Small Business	(1.5)
CAOT-134A	Beginning Microsoft Access	.5
CAOT-153	Introduction to Internet	1
CAOT-172A	Beginning Word	.5
CAOT-187	PowerPoint Presentations	.5
CAOT-188	Desktop Publishing with QuarkXPress	2
CAOT-193A	Beginning Excel	.5
CAOT-193B	Intermediate Excel	.5
CAOT-194A	MS Office Advanced OR	2
CS-101L	Computer Applications	<u>(2)</u>
		9

OFFICE SUPPORT

Upon completion of the Office Support Certificate of Accomplishment students will have gained a knowledge of how a business functions and human relations in business. In addition, students will have acquired basic office support skills.

BA-116	Business English and Communication	4
CAOT-110A, B, or C	Beginning Keyboarding I, II, or III	1
CAOT-193A	Beginning Excel	.5
CS-101L	Computer Applications	<u>2</u>
		7.5

SQL DATABASE ADMINISTRATOR

The skills learned in this program are for individuals who derive physical database designs, develop logical data models, create physical databases, configure and manage security, monitor and optimize databases, and install and configure SQL Server.

CNET-162A	Microsoft Server Operating Systems	2
CNET-162B	Windows Network Infrastructure Administration	2
CNET-168A	Network Application Administration II – Database (SQL)	2
CS-104A	Visual Basic.NET Programming	4
CS-104B	Advanced .NET Programming	<u>4</u>
		14

3D MODELING AND ANIMATION

This certificate provides students with technical and aesthetic skills needed for animation and 3D modeling.

MM-102A	Multimedia I	4
MM-115	3D Animation	3
MM-116	3D Modeling	3
MM-117	Advanced 3D Modeling and Animation	<u>3</u>
		13

VB PROGRAMMING

This certificate prepares students with an introduction to office and Visual Basic.NET programming skills.

CS-101	Introduction to Computers and Information Technology	3
CS-101L	Computer Applications	2
CS-104A	Visual Basic.NET Programming	4
CS-152	Data Communications	<u>2</u>
		11

WEB CONTENT

This is the third of three Web Certificates, which together prepare students for a broad and specific readiness in dynamic Web technology, from administration to development and interface. Web Content specializes on the user interface aspect of the Web.

CS-162	XHTML	4
CS-178	XML	3
Choose 9-10 units from the following courses:		9-10
MM-102A	Multimedia I	(4)
CS-175	Script Technology for Web Development	(4)
CS-179	Dynamic Web with ColdFusion	(3)
MM-103A	Introduction to Flash: Animation AND	(.5)
MM-103B	Intermediate Flash: Interactivity	(.5)
		16-17

WEB DELIVERY

This is the second of three Web Certificates, which together prepare students for a broad and specific readiness in dynamic Web technology, from administration to development and interface. Web Delivery specializes on programming languages currently driving the data on the Web.

Choose 16 units from the following courses:		
CS-104A	Visual Basic.NET Programming	4
CS-104B	Advanced .NET Programming	4
CS-104C	ASP.NET Programming	4
CS-121	Applied Programming in Visual C++	4
CS-122	C#.NET Programming	4
CS-149	PERL Programming	4
CS-170	Java Programming	4
CS-172	Servlets and JSP	4
CS-176	Introduction to PERL CGI Programming	4
		16

WEB INFRASTRUCTURE

This is the first of three Web Certificates, which together prepare students for a broad and specific readiness in dynamic Web technology, from administration to development and interface. Web Infrastructure specializes on Web server administration, the backbone of the Web.

CNET-140A	Linux Installation and Configuration	2
CNET-140B	Linux System Administration	2
CNET-150	Network Operating Systems	4
CNET-160A	Microsoft Client Operating Systems	2
CNET-162A	Microsoft Server Operating Systems	2
Choose one of the following courses:		3-4
CS-104D	Web Services for .NET	(4)
CNET-137	Introduction to SQL Programming	(4)
CNET-157	TCP/IP and Internetworking	(3)
		15-16

WEB PAGE DESIGN

Upon completion of the Web Page Design Certificate students will have developed and designed Web sites.

MM-102A	Multimedia I	4
MM-104	Advanced Interactivity in Flash	3
MM-105	Web Site Design	4
MM-162	XHTML	<u>4</u>
		15

WINDOWS MCSA

Upon completion of this program students will be prepared for Microsoft certifications as an MCSA (Microsoft Certified Systems Administrator). The MCSA credential certifies that students have the skills to successfully implement, manage, and troubleshoot the ongoing needs of Microsoft Windows 2000-based operating environments, including Windows.NET Server. An MCSA candidate should have six to twelve months of experience working with a desktop operating system, a network operating system, and an existing network infrastructure. MCSA candidates are required to pass three core exams and one elective exam. Following are the sequence of Ohlone courses that will prepare students for certification and identify the core and elective Microsoft exams that will lead to certification:

CNET-160A	Microsoft Client Operating Systems	2
CNET-162A	Microsoft Server Operating Systems	2
CNET-162B	Windows Network Infrastructure Administration	2

Choose one course from the following:

CNET-165B	Microsoft Internet Security and Acceleration Server (ISA)	2
CNET-167A	Network Application Administration I - Email (Exchange 2003)	2
CNET-168A	Network Application Administration II - Database (SQL)	<u>2</u>
		8

WINDOWS MCSE

For network professionals Microsoft offers the Microsoft Certified Systems Engineer (MCSE) credential. MCSEs are qualified to effectively plan, implement, maintain, and support information systems in a wide range of computing environments using the Microsoft Windows 2003 Server and the Microsoft Back Office integrated family of server products.

CNET-160A	Microsoft Client Operating Systems	2
CNET-162A	Microsoft Server Operating Systems	2
CNET-162B	Windows Network Infrastructure Administration	2
CNET-164A	Microsoft Directory Services	2

Choose any two of the following courses:

CNET-164B	Designing Microsoft Windows Directory Services Infrastructure	2
CNET-165A	Designing a Secure Microsoft Windows Network	2
CNET-165B	Microsoft Internet Security and Acceleration Server (ISA)	2
CNET-167A	Network Application Administration I - Email (Exchange 2003)	2
CNET-168A	Network Application Administration II - Database (SQL)	<u>2</u>
		12